National Institute of Environmental Health Sciences

The effect of heat waves on mortality and effect modifiers in four communities of Guangdong Province, China

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Year: 2014

Journal: The Science of The Total Environment. 482-483 (1): 214-221

Abstract:

Background: Heat waves have been reported to be associated with increased mortality; however, fewer studies have examined the effect modification by heat wave characteristics, individual characteristics and community characteristics. Methods: This study investigated the effect of extreme heat on mortality in 2 urban and 2 rural communities in Guangdong Province, China during 2006-2010. The effect of extreme heat was divided into two parts: main effect due to high temperature and added effect due to prolonged heat for several consecutive days. A distributed lag non-linear model was used to calculate the relative risk with consideration of lag days and potential confounding factors. Separate models were further fit by individual characteristics (cause of death, age and gender) and heat wave characteristics (intensity, duration and timing), and potential effect modification of community characteristics was examined using a meta-regression, such as educational levels, percentage of the elderly, Gross Regional Domestic Product (GDP). Results: The overall main effects (ER. Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 8.2%, 95% CI: 3.4%, 13.2%) were greater than the added effects (ER. Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.0%, 95% CI: -. 3.8%, 4.0%) on the current day. The main effect peaked at lag0-2, and was higher for the two rural areas compared to the two cities, for respiratory compared to cardiovascular mortality, for those ≥. 75. years old and for females. The modifying effects of heat wave characteristics and community characteristics on mortality were not statistically significant. Conclusion: This study suggests the effects of extreme heat were mainly driven by high temperature, which can be modified by some individual characteristics.

Source: http://dx.doi.org/10.1016/j.scitotenv.2014.02.049

Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature: ☑

resource focuses on specific type of geography

Rural, Urban

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Injury, Respiratory Effect

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly, Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content